



# Berardino Barbati

## ABOUT ME

I am an industrial chemist, graduated in 2018. In my studies, I specialized in the issues concerning the remediation of contaminated sites.

Specifically, I investigated the application of green bio-based surfactants to solubilize and mobilize organic pollutants in soil washing and soil flushing processes in the operative context of SER (Surfactant-Enhanced Remediation) technology.

## WORK EXPERIENCE

01/11/2021 – CURRENT Rome, Italy

**PHD STUDENT IN CHEMICAL PROCESSES FOR INDUSTRY AND ENVIRONMENT.** SAPIENZA UNIVERSITY OF ROME

### MAIN ACTIVITIES

Development of experimental protocols for the laboratory-scale study of remediation processes, in the operative context of SEAR (Surfactant-Enhanced Aquifer Remediation) technology.

- Physico-chemical characterization of different green bio-based surfactants, and batch and continuous column experiments for assessing their applicability in the mobilization of organic pollutants from secondary contamination sources. The enhanced solubilization of strongly adsorbed contaminants and the enhanced mobilization of contaminants in the form of residual pure phase are the main investigated mechanisms.
- Lab-scale studies regarding the mobilization of organic pollutants from real contaminated matrices, particularly highly recalcitrant hydrocarbons from a contaminated marine sediments and chlorinated solvents from aquifer samples.

### MAIN RESPONSIBILITIES

- Support and technical assistance to students for their master's degree on topics related to my research project.
- Management and organization of group experimental activities.
- Experimental data analysis and processing.

## EDUCATION AND TRAINING

09/2018 – 10/2021 Rome, Italy

**MASTER DEGREE IN INDUSTRIAL CHEMISTRY** Chemistry Department, Sapienza University of Rome

The dynamics of pollutants in the subsoil with particular attention on different types of pollutants and their chemical-physical properties, the study of transport phenomena, and the formation and aging of secondary contamination sources.

Systems and technologies for the remediation of polluted environmental matrices, studying their principles of operation and applicability.

Management methods of a contaminated site with special attention to the regulatory aspect according to Italian D.Lgs 152/2006.

**Field of study** Environmental Chemistry | **Final grade** Master Degree. 110/110 Cum laude |

**Thesis** Synthetic and natural surfactants for applications in the remediation of contaminated aquifers: characterization and process study for technological implementation

09/2015 – 10/2018 Rome, Italy

**BACHELOR DEGREE IN INDUSTRIAL CHEMISTRY** Chemistry Department, Sapienza University of Rome

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Fluid dynamics and transport phenomena.

Unit operations (thermal exchange, distillation, gas-liquid adsorption, solvent extraction, sedimentation).

**Field of study** Industrial Chemistry | **Final grade** Bachelor Degree, 110/110 |

**Thesis** Comparative evaluation of the fermentability of poly-hydroxy alkanates (PHAs) from different sources as slow release electron donor sources for environmental applications

09/2010 – 07/2015 Avezano (AQ), Italy

**HIGH SCHOOL GRADUATION** Liceo Scientifico Vitruvio Pollione

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**Final grade** 70/100

## ● LANGUAGE SKILLS

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Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	C1	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

## ● DIGITAL SKILLS

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Microsoft Excel | Microsoft Powerpoint | Microsoft Word | Creativity | Sigma plot | QGIS: basic level

## ● CONFERENCES AND SEMINARS

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09/02/2022 – 11/02/2022 Brescia

**SiCon2022**

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*Oral presentation.* Synthetic and natural surfactants for applications in the remediation of contaminated aquifers: characterization and process study for technological implementation.

10/05/2022 – 10/05/2022 Rome

**9° conferenza sulla chimica sostenibile (FEDERCHIMICA)**

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*Oral presentation.* Synthetic and natural surfactants for environmental remediation: characterization and study of the mobilization of contaminants.

20/06/2022 – 23/06/2022 Rome

**First Symposium for Young Chemists: Innovation and Sustainability" (SYNC2022)**

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*Oral presentation.* Alkyl-polyglycosides formulations for Contaminated Aquifer Remediation: Characterization and NAPLs Mobilization Study by Batch and Continuous Tests.

03/07/2022 – 06/07/2022 Ischia (Naples)

**GRICU2022**

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*Oral presentation.* Synthetic and natural surfactants for environmental applications using SEAR technology: process study by batch and column tests.

11/09/2022 – 16/09/2022 Lublin (Poland)

**Surfactant In Solution 2022 (SIS2022)**

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*Oral presentation.* Synthetic and natural surfactants for environmental applications using SEAR technology: process study by batch and column tests.

08/02/2023 – 10/02/2023 Rome

### SiCon2023

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*Oral presentation.* Alkyl polyglycoside formulations for the mobilization of strongly adsorbed hydrophobic organic contaminants.

21/05/2023 – 24/05/2023 Naples

### ICheaP16

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*Oral presentation.* Characterization and Application of Sodium Surfactin in Mobilization of Toluene and Perchloroethylene by Batch Configuration Test.

07/11/2023 – 10/11/2023 Rimini

### ECOMONDO

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*Oral presentation.* Enhanced mobilization of polycyclic aromatic hydrocarbons from marine sediments in washing and flushing processes by surfactants.

08/02/2024 – 10/02/2024 Taormina (ME)

### SiCon2024

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*Oral presentation.* Enhanced mobilization of polycyclic aromatic hydrocarbons from marine sediments in washing and flushing processes by surfactants.

01/06/2024 – 07/06/2024 Denver (Colorado)

### BATTELLE 2024 Chlorinated Conference

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*Oral presentation.* Surfactant enhanced mobilization of polycyclic aromatic hydrocarbons from marine sediment by washing and flushing processes.

*Poster presentation.* Synthetic and natural surfactants for NAPLs mobilization. Experimental approach for process study: from batch experiments to lab-scale soil flushing simulation.

24/06/2024 – 28/06/2024 Rome

### Second Symposium for Young Chemists: Innovation and Sustainability" (SYNC2024)

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*Oral presentation.* Surfactant enhanced mobilization of polycyclic aromatic hydrocarbons from marine sediment by washing and flushing processes.

## ● HONOURS AND AWARDS

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09/2022

**Remtech Degree Awards – Remtech Expo - Groundwater Engineering Group - Politecnico di Torino**

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Link <https://drive.google.com/file/d/1ImcC0qifaUsJbk3EB80z8UrZH3AlxeY2/view?usp=sharing>

09/2022

**Federchimica Degree Awards “Giorgio Squinzi” – Federchimica CONFINDUSTRIA**

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Link <https://drive.google.com/file/d/1VDRZPq93UNu17uxskyzizHTCeFVXxw-4/view?usp=sharing>

## ● PUBLICATIONS

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2022

**[Synthetic and Natural Surfactants for Potential Application in Mobilization of Organic Contaminants: Characterization and Batch Study](#)**

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Water, 14(8), 1182

2023

**[Enhanced solubilization of strongly adsorbed organic pollutants using synthetic and natural surfactants in soil flushing: Column experiment simulation.](#)**

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Journal of Environmental Chemical Engineering, 11(5), 110758

2023

**Characterization and Application of Sodium Surfactin in Mobilization of Toluene and Perchloroethylene by Batch Configuration Test**

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Chemical Engineering Transactions, 100(March), 547–552

2024

**Preliminary study for Polycyclic aromatic Hydrocarbons mobilization from contaminated marine sediment using synthetic and natural surfactants**

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Chemical Engineering Science, 298, 120317

2024

**Surfactant-Enhanced Mobilization of Polycyclic Aromatic Hydrocarbons from an Historically Contaminated Marine Sediment: Study of Surfactants' Concentration Effect and Continuous Test for Sediment Flushing Simulation**

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Journal of Environmental Chemical Engineering, 12 (5), 113820